

CLAIMS

1. A silicon carbide sintered body, wherein

the porosity obtained from areas of silicon carbide particles and silicon particles in a sectional polished surface of the silicon carbide sintered body is greater than 15% and less than 30%, when the porosity (%) equals $(\frac{\text{the area of silicon particles}}{\text{the area of silicon particles} + \text{the area of silicon carbide particles}}) \times 100$; and

a content of residual silicon is less than 4% to a total volume of the silicon carbide sintered body.

2. The silicon carbide sintered body according to claim 1, wherein

a total content of impurity elements other than silicon and carbon in the silicon carbide sintered body is less than 10 ppm.

3. The silicon carbide sintered body according to claim 1 or 2, wherein a content of nitrogen is greater than 150 ppm.

4. A manufacturing method of a silicon carbide sintered body that uses a reaction sintering method, comprising

(1) dissolving and dispersing silicon carbide powder in a solvent, followed by pouring an obtained slurry-like powder mixture in a mold, further followed by drying to obtain a green body,

(2) calcining the obtained green body under a vacuum atmosphere or an inert gas atmosphere at a temperature in the range of 1200°C to 1800°C to obtain a calcined body 1,

(3) impregnating the obtained calcined body 1 with a carbon source,

(4) calcining a calcined body 2 impregnated with a carbon source,

(5) reaction sintering where the obtained calcined body 2 is impregnated with molten metallic silicon and free carbon in the calcined body 2 and silicon are reacted to obtain a silicon carbide body, and

(6) heating in a vacuum atmosphere at a temperature in the range of 1450°C to 1700°C for 30 to 90 minutes to remove unreacted silicon.